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10/594,157	09/26/2006	Ian Alastair Kirk	ZQ120/07001	7042

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EXAMINER

FULLER, ROBERT EDWARD

ART UNIT	PAPER NUMBER
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3676

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOmail@MiddReut.com

Office Action Summary	Application No. 10/594,157	Applicant(s) KIRK ET AL.	
	Examiner ROBERT E. FULLER	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1,2,5,7-10,13-37 and 40-46 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1,2,5,7-10,13-37 and 40-46 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Applicant's submission, filed December 11, 2011, has been carefully considered. However, examiner maintains the rejections set forth in the previous Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 7-10, 13-33, 35-37, and 40-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph (US 2,589,534) in view of DeBray et al. (US 6,032,748).

With regard to claims 1, 35, 36, 44, and 45, Buttolph discloses an apparatus for mobilizing drill cuttings in a well, the apparatus comprising a sleeve (13), at least one vane (28) provided on the sleeve, the sleeve having a bearing region (i.e. its outer surface proximate numeral 41), at least one bushing (14) that is rotatably mounted on the bearing region of the sleeve, at least two blades (51) mounted on the bushing, the at

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least two blades defining at least one fluid conduit between adjacent blades, the blades and vane being rotatable relative to one another (column 5, lines 64-71).

Buttolph discloses the wear sleeve being threadedly connected to the drill string, and fails to disclose the sleeve being axially divided, such that it clamps around the drill string.

DeBray et al. disclose an apparatus similar to that of Buttolph, having a wear sleeve (26) clamped around a drill string, the sleeve also having a bearing region on which a bushing (50) is rotatably mounted.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Buttolph such that the sleeve was split and clamped around the drill pipe, rather than threadedly attached, in order to enable the sleeve to be connected to the drill pipe "at most any location along the string" (DeBray et al., column 4, lines 26-28), rather than being constrained to only the areas which had threads.

With further regard to claim 35, in the combination of Buttolph and DeBray et al., the apparatus is clamped to the tubular by virtue of the sleeve itself being a clamp. With further regard to claim 45, Buttolph discloses an annular clamp (i.e. upper collar 11).

With regard to claims 2 and 37, since Buttolph discloses vanes and blades which are relatively rotatable, then Buttolph's apparatus will create a pressure difference in a fluid flowing past the vanes and blades.

With regard to claims 7, 9, 29, and 30, Buttolph discloses the vanes being parallel to the axis of rotation, while the blades are offset from the axis. Therefore,

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Buttolph fails to disclose the blades being parallel and vanes being offset. Buttolph also fails to disclose the specific angle of offset. Furthermore, Buttolph fails to disclose the vanes and blades being offset in opposite directions.

It would have been considered obvious to modify Buttolph to offset the vanes, rather than the blades, as this would have amounted to the mere reversal of the parts of Buttolph. It also would have been considered obvious to offset the vanes and blades in opposite directions, as this type of configuration was well known for creating upward thrust and turbulence in the wellbore, and therefore would have yielded predictable results. See Yancey for example, which shows offset vanes and parallel blades. See also US 2,352,412 to Sandstone, which shows oppositely offset vanes and blades. Finally, it would have been considered obvious to offset the blades of Buttolph by 3-10 degrees, as it has been held that discovering an optimum value of a result effective variable (i.e. the offset angle) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to claim 8, Buttolph's blades extend helically (see Fig. 5).

With regard to claim 10, Buttolph discloses an annular clamp (i.e. upper collar 11) around the outside of the sleeve (i.e. in close proximity of the outside) and engaging an outer surface of the sleeve (i.e. the upper annular shoulder surface—see Fig. 5).

With regard to claims 13, 14, 40, and 41, in combination, Buttolph and DeBray et al. teach the vanes rotating with the drill string (as the wear sleeve in DeBray et al. is tightly clamped to the drill string via bushings 16 and 18).

With regard to claims 15-19, 27, 28, and 31-33, Buttolph fails to disclose the claimed shapes of the blades and vanes. However, these shapes are all well known, as shown by US 4,676,716 and US 3,882,946 (asymmetrical foil-shaped blades—Fig. 3, 4, 9, and 10), US 6,056,073 (scooped, concave vanes), and US 5,074,356 (sinusoidal vanes—Fig. 1). It would have been considered obvious to one of ordinary skill to have used anyone of the claimed blade/vane shapes, as this would have been a matter of simple substitution of one known blade shape for another, and furthermore because has been held that a change in the shape of a prior art device is a design consideration within the level of ordinary skill in the art. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With regard to claim 20, Buttolph discloses a rigid bushing, since it is made of metal.

With regard to claim 21, Buttolph's sleeve is annular, and accommodates a tubular (10).

With regard to claim 22, Buttolph's vanes are integral (see Fig. 5).

With regard to claims 23 and 25, Buttolph shows both the vanes and blades being integral with the sleeve and the bushing, respectively. However, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have made the vanes and blades of Buttolph separable and modular, rather than integral, to increase the ease of repair of the device, and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

With regard to claim 24, Buttolph's blades are integral with the bushing (see Fig. 5).

With regard to claim 26, Buttolph's vanes are parallel to the axis of rotation (see Fig. 5).

With regard to claim 42, Buttolph's blades (51) centralize the sleeve within the wellbore (see Figs. 1-3).

With regard to claim 43, Buttolph discloses the bushing being a solid sleeve, rather than a clamp. However, DeBray et al. disclose the bushing (50) being split and clamped around the sleeve (26).

With regard to claim 46, Buttolph in view of DeBray et al. fails to disclose the sleeve being hinged, since DeBray et al. disclose the rotatable bushing being hinged, but not the sleeve.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the combination of Buttolph and DeBray et al. such that the sleeve was also hinged in the same manner as the bushing, since DeBray et al. show that such a configuration was well known at the time of invention and therefore would have yielded predictable results.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Yancey (US 2,794,617).

Buttolph in view of DeBray et al. fails to disclose blades that extend farther than the vanes.

Yancey discloses blades (56) which are rotatable relative to vanes (42), and the blades extend farther than the vanes (see Fig. 2).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have extended the blades of Buttolph past the vanes, as Yancey discloses that this type of configuration was well known in the art and would have yielded predictable results.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Shizawa (JP62101149).

Buttolph in view of DeBray et al. fails to disclose the blades comprising a notch.

Shizawa discloses a mixing/agitating device having a blade (14) comprising multiple notches (13).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the blades of Buttolph in view of DeBray et al. with notches, as Shizawa states that "turbulences and divisions are generated by the flow caused by respective notches and blades...to mix and agitate the fluids more effectively" (see Shizawa Abstract).

Response to Amendment

The affidavit under 37 CFR 1.132 filed December 21, 2011 is insufficient to overcome the rejection of claims 1, 35, and 36 based upon Buttolph in view of DeBray et al. as set forth in the last Office action because:

The affidavit attacks the rejection (set forth in the Office Action mailed June 21, 2011) under 35 U.S.C. 103(a) based on Buttolph in view of DeBray et al.

The affidavit is insufficient because it fails to set forth sufficient facts. The affidavit merely constitutes a speculative discussion of how the device of Buttolph *may* behave if clamped in the manner described by DeBray. For example, the affidavit argues that possible axial deformation of a modified, clamped sleeve may "reduce the sleeve's axial support" and "risk misalignment of the collars" (paragraph 0014). Axial deformation may "cause the modified sleeve 13 to adopt a non-cylindrical configuration, which would prevent or restrict free rotation of the rest 14 on the sleeve 13" (paragraph 15). These assertions amount to mere speculation, and do not constitute persuasive "evidence" as required by MPEP 716. Examiner asserts that it is also possible that the sleeve may *not* deform due to axial compression, and that the sleeve may retain all of its functionality if modified as a clamp. The affiant presents no *facts* which contradict this assertion.

Affiant discusses numerous disadvantages to utilizing a clamped sleeve rather than a solid sleeve (e.g. paragraphs 21-24). However, these possible disadvantages do not constitute a clear teaching away. Every possible configuration one may try has its own advantages and disadvantages. It is understood that there are disadvantages to using a clamp rather than a solid sleeve, but there are also advantages, i.e. the freedom to place the sleeve wherever desired along the drill string, without the need for Buttolph's unique externally-threaded drill pipe.

By way of example, the assertion is made in paragraph 17 that "forming the sleeve as a solid cylinder...rather than with a split...has the advantage that the inner and outer diameter of the rest 14 can be very precisely controlled and predicted, so that a solid sleeve 13 can be made to fit tightly over the body 10 with a close tolerance..." Affiant assumes that one of ordinary skill would not be capable of forming a clamp that provided a close tolerance. However, if it is assumed that one of ordinary skill could construct a clamp having the proper tolerances, then the proposed combination of Buttolph and DeBray would function properly. The latter assumption is supported by facts, i.e. the disclosure of DeBray which shows a clamp having proper tolerances.

Affiant asserts that the advantages of the Buttolph apparatus "would ALL be completely lost if the sleeve 13 were to be split and clamped on to the Buttolph body" (paragraph 18). Examiner respectfully traverses, as this assertion by affiant is based upon a string of speculative events (discussed in paragraphs 8-17) which must occur to render the modified Buttolph apparatus ineffective. For example, the sleeve would have to deform axially and radially, the sleeve would have to be formed with improper tolerances, and so on. Once again, it is possible that these speculative events may *not* occur, and that the modified clamped sleeve may simply function as intended. This possibility is supported by evidence--the evidence being the disclosures of numerous patents (such as DeBray, Krueger, and Thompson, discussed in the previous Office Action) which describe clamped drilling stabilizers and/or centralizers which function effectively during typical drilling operations.

Response to Arguments

Applicant's arguments filed December 21, 2011 have been fully considered but they are not persuasive.

Applicant has reiterated many of the points set forth in the affidavit, and examiner's response to these arguments is contained in the paragraph above.

Applicant further argues that the modification of Buttolph proposed in the Office Action would render the Buttolph unsatisfactory for its intended purposed. As discussed above, this assertion is speculative and is not based on evidence.

Finally, applicant argues that Krueger and Thompson do not support examiner's assertion that Buttolph's modified, clamped sleeve would be able to withstand the forces encountered during the drilling operation. Applicant's main reasoning is that Krueger and Thompson disclose simple centralizers/stabilizers which do not having any moving parts. Conversely, Buttolph's device does have moving parts, as rest 14 rotates on sleeve 13.

Examiner respectfully traverses applicant's argument. Buttolph's apparatus *does* have relatively moving parts (specifically element 14), however, the *sleeve does not rotate relative to the drillpipe*. Whether there is another element mounted around the sleeve which rotates relative to the sleeve is irrelevant. Krueger and Thompson both support the idea that a sleeve can be fixedly clamped to a drillpipe and still withstand large drilling forces.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHANE BOMAR/
Supervisory Patent Examiner, Art
Unit 3676

01/19/2012
/R.E.F./